

Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of)	
)	
Revision of Part 15 of the Commission's Rules)	ET Docket No. 98-153
Regarding Ultra-Wideband Transmission)	
Systems)	
)	
Staff Report on Measured Emissions Data,)	DA 02-2786
Project TRB 02-02)	
)	

To: The Commission

COMMENTS ON EMISSIONS REPORT

Cingular Wireless LLC ("Cingular") hereby submits its comments on "Measured Emissions Data For Use In Evaluating The Ultra-Wideband (UWB) Emissions Limits In The Frequency Bands Used By The Global Positioning System (GPS)" (*Emissions Report*), prepared by OET's Laboratory Division, Technical Research Branch, Project TRB 02-02, released October 22, 2002.¹

I. THE *EMISSIONS REPORT* IS TOO LITTLE, TOO LATE FOR THE COMMISSION'S PLANNED 12-MONTH UWB RULE LIBERALIZATION

When the Commission adopted its *UWB Order*, it recognized that it had only limited information concerning UWB devices' interference potential. Accordingly, the Commission said that in the next six to twelve months it planned to study the interference potential of UWB

¹ Public Notice, *FCC Releases Staff Report "Measured Emissions Data For Use In Evaluating The Ultra-Wideband (UWB) Emissions Limits In The Frequency Bands Used By The Global Positioning System (GPS),"* DA 02-2786 (Oct. 22, 2002).

devices and issue a further notice of proposed rulemaking on the subject.² In particular, the Commission said that it might be able to make its “conservative” standards for UWB devices “more flexible” as the result of its studies, “as we continue to collect data regarding UWB operations.”³

Nine months of that six- to twelve-month evaluation period have now passed. The only FCC study that has come to light in that time is the *Emissions Report*. It contains *no* data regarding UWB operations because, as the report admits, “very few UWB devices ha[ve] actually reached the marketplace.”⁴ The report does not indicate, however, whether any prototype UWB devices have been obtained from manufacturers for testing, and, if so, what the results of the tests have been.⁵ The report also does not indicate when actual UWB operations or prototype UWB devices will be studied.

Given the Commission’s commitment to evaluate UWB operations, review its UWB device restrictions, and adopt a further notice of proposed rulemaking by February 2003, the *Emissions Report* contributes nothing to realization of these goals. It provides none of the data that the Commission said was the key to UWB rule revisions.

² *Ultra-Wideband Transmission Systems*, ET Docket 98-153, *First Report and Order*, 17 F.C.C.R. 7435, ¶¶ 1, 269, 273, 199 n.292 (2002), *pets. for recon. pending*.

³ *Id.* at ¶ 1, 2.

⁴ *Emissions Report* at i, 2.

⁵ The report does not indicate the date(s) of the tests. Before the report was released, however, the Commission granted two UWB equipment authorization applications to Time Domain Corporation. (FCCID Nos. NUF-CW, granted Sept. 12, 2002, and NUF-200SGT-0702, granted Oct. 11, 2002.) Thus, OET began planning its tests, and may have conducted them, at a time when these applications were pending, and could have required Time Domain to “submit one or more sample units for measurement,” pursuant to 47 C.F.R. § 2.943. Accordingly, the fact that UWB equipment has not yet reached the marketplace does not explain the failure to test such equipment.

With a lack of UWB operations to study, the staff nevertheless performed what it called a “first-step assessment” of the UWB rules.⁶ This effort consisted of studying ambient RF emission levels in the GPS bands in selected environments and RF emissions in the GPS bands from selected electronic and electrical devices.

There was apparently no attempt to make the studies systematic or representative. All of the locations selected for ambient noise studies were in a single geographic area, around Washington and Baltimore, and do not include many types of environments where assisted GPS is likely to be used in connection with wireless E-911 calls, such as homes or highways. In fact, the study is no more than a snapshot of what is occurring at a certain location, on a certain date, and at a certain time. Likewise, there appears to be no rhyme or reason to the selection of electrical and electronic devices tested, and no rationale for why such devices were tested at all.

In the past there have been some similar studies performed by NTIA which appear to be much more rigorous, such as:

- NTIA Report 02-390 Man-Made Noise Power Measurements at VHF and UHF Frequencies
- NTIA Report 97-336 Broadband Spectrum Survey at Los Angeles, California
- NTIA Report 95-321 Broadband Spectrum Survey at Denver, Colorado
- NTIA Report 96-330 The Natural and Man-Made Noise Environment in the PCS Bands

There is no indication in the *Emissions Report* that OET conferred with NTIA prior to performing its studies.

With this study as the first step of the assessment, it is unclear what the second step of the assessment will be, and when the second step will be undertaken, given the timetable established by the Commission. Further study similar to that described in the *Emissions Report* will not

⁶ *Id.*

bring the Commission any closer to understanding the characteristics of UWB operations. The *Emissions Report* is not responsive to the *UWB Order*: Hair dryers and electric drills are not UWB devices, and RF noise levels in the FCC's server room and an automobile factory tell the Commission nothing about whether UWB devices will interfere with an assisted-GPS E-911 call. The information in the *Emissions Report* is no substitute for data about UWB devices in operation, which is what the Commission said it was planning to study. Without such data, the Commission has no grounds for proceeding with the reevaluation and presumed liberalization of the UWB rules by February 2003, as planned.

II. THE *EMISSIONS REPORT* VALIDATES THE NEED FOR CONSERVATIVE UWB LIMITATIONS

While the *Emissions Report* does not provide the Commission with a basis for reevaluating its UWB device emissions limits in the direction of liberalization, it does validate the need for a conservative approach to UWB limits. It is also evident from the information presented in the report that a more rigorous approach is needed to fully understand the characteristics of interference as well as noise:

- The *Emissions Report* demonstrates that the ambient emissions and the RF radiation from Part 15 devices are relatively narrowband. Accordingly, interference from these sources is likely to be confined to specific frequency bands and has the potential to be harmful only if the victim receiver is tuned to an affected frequency band. The report shows that a comparison, in terms of interference potential, between a narrow-band ambient emission and a UWB emission is specious unless the narrow band signal is coincident with the pass band of a GPS receiver.” *Emissions Report* at 30. Thus, any comparison between ambient emissions and emissions from UWB devices is meaningless, especially since no actual UWB devices have been tested and no standard exists for UWB waveforms.
- According to the very limited measurement results presented, the RF radiation from Part 15 consumer electronic devices is typically well below the permissible levels set for them by the rules. Some UWB proponents have argued that radiation from such devices is at or near their maximum permissible limit, which in the GPS band is between 12 dB and 34 dB above that permitted for UWB devices (depending upon the type of UWB device). The assumption by the UWB proponents was the foundation for their

argument that the UWB limit in the GPS band should be raised. If the *Emissions Report* is representative of actual Part 15 emission levels, there is no basis for an increase in the allowed UWB transmit power in the GPS band.

- The ambient RF noise levels at some locations were relatively high — sufficiently so as to potentially cause harmful interference to GPS or assisted GPS reception. The report does not indicate whether the cause of these noise levels was traced or whether the sources of the noise were in compliance with applicable licensing or Part 15 requirements. Again, these results do not lead to the conclusion that UWB transmit power could be increased.
- The study is no more than a snapshot of what is occurring in RF spectrum at a limited number of locations on a certain date and time. There is no description of what activities were ongoing at that date and time, where the test receiver was located with respect to the source of the noise, *etc.* Given that interference levels are a function not only of the transmitting device's power but also of the distance to the victim receiver, no conclusions can be drawn from the study with respect to "average" or "typical" noise floors even at the particular locations tested. Moreover, the limited sample size and its unrepresentative nature preclude drawing any more generally applicable conclusions from the tests. In short, the study tells the Commission nothing about indoor noise levels in general and makes no attempt to characterize the statistical nature of the interference that would be caused by a UWB device.
- A detailed assessment of the ambient RF environment and the statistical characteristics of interference and noise should be carried out by qualified personnel in accordance with standard, industry-accepted testing techniques. The IEEE and other standards bodies have performed these types of analyses in the past and developed several globally accepted standards. For example:
 - 430-1986: IEEE Standard Procedures for the Measurement of Radio Noise from Overhead Power Lines and Substations (1986).
 - C63.2-1996: American National Standard for Electromagnetic Noise and Field Strength Instrumentation, 10 Hz to 40 GHz — Specifications (1996).
 - C63.4-2001: American National Standard for Methods of Measurement of Radio Noise Emissions from Low Voltage Electrical and Electronic Equipment in the Range 9 KHz to 40 GHz (2001).

The fact that OET's engineering staff performed a variety of measurements in the Washington-Baltimore area for two weeks does not automatically mean that the results of those tests are meaningful. Without a more rigorous approach, including standardized measurement techniques, the results are nothing more than anecdotal.

CONCLUSION

For the foregoing reasons, the *Emissions Report* does not provide a basis for relaxation or liberalization of the Commission's UWB device radiation limits.

Respectfully submitted,

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